

Populus tremuloides - Betula papyrifera / (Abies balsamea, Picea glauca) Forest

COMMON NAME	Trembling Aspen - Paper Birch / (Balsam Fir, White Spruce) Forest
SYNONYM	Aspen-Birch/Boreal Conifer Forest
PHYSIOGNOMIC CLASS	Forest (I)
PHYSIOGNOMIC SUBCLASS	Deciduous forest (I.B)
PHYSIOGNOMIC GROUP	Cold-deciduous forest (I.B.2)
PHYSIOGNOMIC SUBGROUP	Natural/Semi-natural (I.B.2.N)
FORMATION	Montane or boreal cold-deciduous forest (I.B.2.N.b)
ALLIANCE	POPULUS TREMULOIDES - BETULA PAPYRIFERA FOREST ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL

USFWS WETLAND SYSTEM TERRESTRIAL

RANGE

Isle Royale National Park

This community is common and widespread throughout the park.

Globally

This community is found in Manitoba, Ontario, northern Minnesota, northern Wisconsin, and Michigan.

ENVIRONMENTAL DESCRIPTION

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This community occupies gentle to steep slopes of ridges at elevations ranging from 630 to 960 feet. Soils are silt loams and sandy loams, usually well-drained.

Globally

This community is found on a variety of topographic positions. Omann and Ream (1971) found it on ridgetops, upper, mid, and lower slopes. These slopes are gentle to moderate. The soils are deep, well drained to rapidly drained mineral soils (Sims *et al.* 1989). The soils are usually loam but can be clay, silt, or sand.

MOST ABUNDANT SPECIES

Isle Royale National Park

<u>Stratum</u>	<u>Species</u>
Tree canopy	<i>Populus tremuloides</i> , <i>Betula papyrifera</i>
Short shrub	<i>Abies balsamea</i> , <i>Rubus parviflorus</i>
Forb	<i>Aster macrophyllus</i> , <i>Aralia nudicaulis</i>

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CHARACTERISTIC SPECIES

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Populus tremuloides, *Betula papyrifera*, *Abies balsamea* (understory)

Globally

Populus tremuloides, *Betula papyrifera*, *Abies balsamea* (sapling)

VEGETATION DESCRIPTION

Isle Royale National Park

The aspen - birch / boreal conifer forest is a successional, deciduous forest with a variable physiognomy ranging from open canopy woodlands to closed canopy forests. Canopy cover varies from 40 to 100% cover; *Populus tremuloides* (25 to 50% cover) and *Betula papyrifera* (5 to 25% cover) are the most abundant canopy trees. *Picea glauca*, *Abies balsamea*, and *Thuja occidentalis* are present as subcanopy trees, saplings, or seedlings. *Abies balsamea* is uncommon in the area burned in the 1936 fire. This is a successional forest that seems most likely to develop into a mixed or evergreen forest type. Cover of subcanopy trees varies from 10 to 70%, the most abundant subcanopy tree is *Picea glauca*. Cover of tall shrubs varies from 20 to 60%; the most abundant tall shrubs are *Abies balsamea*, *Picea glauca*, and *Corylus cornuta*. Cover of short

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Isle Royale National Park

shrubs varies from 5 to 50%; the most abundant short shrubs are *Abies balsamea*, *Rubus parviflorus*, and *Populus tremuloides*. Cover of dwarf shrubs varies from 5 to 40%, most abundant are *Abies balsamea* and *Diervilla lonicera*. Cover of herbs varies from 20 to 90%; the most abundant herbs are *Aster macrophyllus* (25 to 50% cover) and *Aralia nudicaulis* (5 to 25% cover). Cover of mosses and lichens varies from 5 to 30%.

Globally

This community is dominated by deciduous trees, with a moderate amount of conifers (<25%). The dominant tree species do not have dense leaf layers and allow a significant amount of light to pass through. This promotes the establishment of prominent sapling and shrub layers and a moderately dense herbaceous stratum. The canopy is dominated by *Betula papyrifera* and *Populus tremuloides*, and occasionally *Populus grandidentata*. Conifer associates include *Abies balsamea* and *Picea glauca*, either in the canopy or, more characteristically, in the subcanopy. *Abies balsamea* and *Picea glauca* are abundant in the sapling layer. Common shrubs include *Acer spicatum*, *Corylus cornuta*, *Diervilla lonicera*, *Linnaea borealis*, *Lonicera canadensis*, *Rosa acicularis*, *Rubus pubescens*, *Sorbus decora*, and *Vaccinium myrtilloides*. The herbaceous stratum is sometimes dominated by *Aster macrophyllus*, but can include a diversity of forbs, such as *Anemone quinquefolia*, *Aralia nudicaulis*, *Clintonia borealis*, *Cornus canadensis*, *Galium triflorum*, *Maianthemum canadense*, *Mitella nuda*, *Pteridium aquilinum*, *Streptopus roseus*, *Trientalis borealis*, and *Viola renifolia*. Mosses include *Plagiomnium cuspidatum*, *Pleurozium schreberi*, *Ptilium crista-castrensis*, and *Rhytidiadelphus triquetrus* (Sims *et al.* 1989, Chambers *et al.* 1997). Diagnostic features of this type are the dominance by both *Populus tremuloides* and *Betula papyrifera*, boreal conifer associates (but very little *Picea mariana* or *Pinus banksiana*), and lack of more southern hardwoods (such as *Acer saccharum*).

OTHER NOTEWORTHY SPECIES

Isle Royale National Park

Information not available

CONSERVATION RANK G5.

DATABASE CODE CEG002466

MAP UNITS 54a

COMMENTS

Globally

Historically, this type originated after catastrophic fires in boreal systems. Aspen can form suckers from the roots of fire-killed trees, up to 30 m from the main stem, and has tiny, light seeds that can travel thousands of meters (Heinselman 1996). This type can cover extensive areas because of logging and repeated post-logging fires, which eliminated most of the local pine seed sources (MN NHP 1993). Locally, where this type occurs adjacent to beaver ponds, beaver may cut many trees resulting in a very open canopy and, eventually, a Boreal Hazelnut-Serviceberry Rocky Shrubland (CEGL005197) community (M. Smith personal communication 1999).

REFERENCES

- Chambers, B.A., B.J. Naylor, J. Nieppola, B. Merchant, P. Uhlig. Field Guide to Forest Ecosystems of Central Ontario. Southcentral Science Section (SCSS) Field Guide FG-01, Ontario Ministry of Natural Resources, North Bay, Ontario, Canada. 200 pp.
- Hansen, H. L., L. W. Krefting, and V. Kurmis. 1974. The forest of Isle Royale in relation to fire history and wildlife. University of Minnesota, Agricultural Exper. Station, Tech. Bull. 294, Forestry Series 13.
- Heinselman, M.L. 1996. The Boundary Waters wilderness ecosystem. University of Minnesota Press, Minneapolis, MN. 334 p.
- Ohmann, L. F. and R. R. Ream. 1971. Wilderness ecology: virgin plant communities of the Boundary Waters Canoe Area. Res. Pap. NC-63. St. Paul, MN.: U. S. Dept. of Agr., For. Service, North Central Exper. Sta. 55 pp.
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